CLAIMS

What is claimed is:

1   1.   A network comprising:

2   a first network node having a first storage with a topology of said

3   network; and,

4   a second network node having a second storage with said topology,

5   wherein communication signals are transmitted between said first and second

6   network nodes;

7   wherein said first and second storages are updated in response to network

8   topology changes, and said first and second network nodes are addressable by

9   one or more parameters that are useable to selectively communicate data.

1   2.   The network of claim 1, wherein said first and second network

2   nodes are positioning devices capable of sending and receiving data wirelessly.

1   3.   The network of claim 2 wherein said one or more parameters

2   comprise spatial parameters for said first and second network nodes, said spatial

3   parameters to include at least one of a position parameter and a velocity

4   parameter.

1   4.   The network of claim 1, wherein said network is self-configuring in

2   that a new node may join said network by protocol sharing, and said topology of

3   the first and second storages will be automatically updated to reflect the addition

4   of said new node to the network.

1   5.   The network of claim 1, wherein said communication signals

2   include non-position data and relative position information.

1   6.   The network of claim 1, wherein relative position information is

2   derived from said communication signals using triangulation techniques.

1   7.   The network of claim 1, further comprising weak-position-signal

2   nodes and strong-position-signal nodes, and wherein said communication

3   signals are transmitted to said weak-position-signal nodes by being relayed

4   through said strong-position-signal nodes.

1   8.   The network of claim 1, further comprising a master transmitter

2   that sets the basic frequency and phase of said network and said first and second

3   network nodes.

1   9.   The network of claim 1, further comprising a plurality of

2   navigation beacons which transmit position signals to said first and second

3   network nodes, and wherein said first and second network nodes are position

4   transponders.

1   10.   The network of claim 9, wherein said communication signals are

2   synchronized to said position signals.

1   11.   The network of claim 9, wherein said communication signals are

2   used as ranging signals for other network nodes, said other network nodes to

3   determine signal propagation time using signal time tagging.

1   12.   The network of claim 9, wherein said position signals are usable for

2   determining absolute positioning information for said first and second network

3   nodes.

1   13.   The network of claim 12, wherein said communication signals

2   include non-position data and absolute position information.

1   14.   The network of claim 9, wherein said communication signals

2   substitute for said position signals in determining network node position

3   information.

1   15.   The network of claim 14, wherein said communication signals are

2   used to provide frequency and signal phase assistance in the determination of

3   node position information.

1   16.   The network of claim 15, wherein said frequency and signal phase

2   assistance is used by said first network node to detect attenuated positioning

3   signals from said plurality of navigation beacons.

1   17.   A positioning device coupled to a network, comprising:

2   a receiver portion;

3   a transmitter portion;

4   a processor coupled to the receiver portion and transmitter portion; and

5   a memory coupled to the processor to store one or more instruction

6   sequences, said instruction sequences to cause the positioning device to transmit

7   communication signals between said positioning device and a second

8   positioning device,

9   wherein said memory further includes information representative

10   of a topology said network, said information to be updated in response to

11   network topology changes, said positioning device and second

12   positioning device to be addressable by one or more parameters that are

13   useable to selectively communicate data.

1   18.   The positioning device of claim 17, wherein said positioning device

2   and second positioning device transmit said communications signals wirelessly.

1   19.   The positioning device of claim 18 wherein said one or more

2   parameters comprise spatial parameters for said positioning device and second

3   positioning device, said spatial parameters to include at least one of a position

4   parameter and a velocity parameter.

1   20.   The positioning device of claim 17, wherein said network is self-

2   configuring in that a new device may join said network by protocol sharing, and

3   said information representative of the topology will be automatically updated to

4   reflect the addition of said new device to the network.

1   21.   The positioning device of claim 17, wherein said communication

2   signals include non-position data and relative position information.

1   22.   The positioning device of claim 17, wherein relative position

2 information is derived from said communication signals using triangulation

3 techniques.

1   23.   The positioning device of claim 17, wherein the network further

2 comprising weak-position-signal devices and strong-position-signal devices, and

3 wherein said communication signals are transmitted to said weak-position-signal

4 nodes by being relayed through said strong-position-signal nodes.

1   24.   The positioning device of claim 17, wherein the network further

2 comprising a master transmitter that sets the basic frequency and phase of said

3 network and said positioning device and second positioning device.

1   25.   The positioning device of claim 17, wherein the network further

2 comprises a plurality of navigation beacons which transmit position signals to

3 said positioning device and second positioning device.

1	26.	The positioning device of claim 25, wherein said communication

2	signals are synchronized to said position signals.

1	27.	The positioning device of claim 25, wherein said communication

2	signals are used as ranging signals for additional positioning devices, said

3	additional positioning devices to determine signal propagation time using signal

4	time tagging.

1	28.	The positioning device of claim 25, wherein said position signals

2	are usable for determining absolute positioning information for said positioning

3	device and second positioning device.

1	29.	The positioning device of claim 28, wherein said communication

2	signals include non-position data and absolute position information.

1   30.   The positioning device of claim 25, wherein said communication

2   signals substitute for said position signals in determining position information.

1   31.   The positioning device of claim 30, wherein said communication

2   signals are used to provide frequency and signal phase assistance in the

3   determination of position information.

1   32.   The positioning device of claim 31, wherein said frequency and

2   signal phase assistance is used by said positioning device to detect attenuated

3   positioning signals from said plurality of navigation beacons.

1   33.   A method comprising:

2   transmitting communication signals from a first network node to a second

3   network node, said first and second network nodes to comprise a network, said

4   first and second network nodes to further be addressable by one or more

5   parameters that are useable to selectively communicate data;

6   storing information representative of a topology of said network in each of

7   said first and second network nodes; and

8   updating said information in response to network topology changes.

1   34.   The method of claim 33, wherein said first and second network

2   nodes are positioning devices capable of sending and receiving data wirelessly.

1   35.   The method of claim 34 wherein said one or more parameters

2   comprise spatial parameters for said first and second network nodes, said spatial

3   parameters to include at least one of a position parameter and a velocity

4   parameter.

1   36.   The method of claim 33, further comprising:

2   protocol sharing by a new network node with said network;

3   self-configuring said network to include said new network node; and

4   automatically updating said information to reflect the addition of said

5   new node to the network.

1   37.   The method of claim 33, wherein said communication signals

2   include non-position data and relative position information.

1   38.   The method of claim 33, wherein relative position information is

2   derived from said communication signals using triangulation techniques.

1   39.   The method of claim 33, wherein the network further comprises

2   weak-position-signal nodes and strong-position-signal nodes, the method further

3   comprising transmitting said communication signals to said weak-position-

4   signal nodes by relaying the communication signals through said strong-

5   position-signal nodes.

1   40.   The method of claim 33, further comprising setting a basic

2   frequency and phase of said network and said first and second network nodes

3   using a master transmitter.

1   41.   The method of claim 40, wherein said first and second network

2   nodes are position transponders, the method further comprising transmitting

3   position signals to said first and second network nodes by a plurality of

4   navigation beacons.

1 42. The method of claim 41, further comprising synchronizing said

2 communication signals to said position signals.

1 43. The method of claim 41, further comprising using said

2 communication signals as ranging signals for other network nodes, said other

3 network nodes to determine signal propagation time using signal time tagging.

1 44. The method of claim 41, further comprising determining absolute

2 positioning information for said first and second network nodes using said

3 position signals.

1 45. The method of claim 44, wherein said communication signals

2 include non-position data and absolute position information.

1	46.	The method of claim 41, further comprising substituting said

2	communication signals for said position signals in determining network node

3	position information.

1	47.	The method of claim 46, further comprising providing frequency

2	and signal phase assistance using said communication signals in the

3	determination of node position information.

1	48.	The method of claim 47, further comprising detecting attenuated

2	positioning signals from said plurality of navigation beacons using said

3	frequency and signal phase assistance.